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On the development of Aurelia aurita and Cotylorhiza borboniea

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occupy the basilar region of the tentacles; the otocysts rest upon the pedal ganglia and are united to the cerebroid ganglia by two very delicate nerves. Each otocyst contains a single large spherical otolith.

The author, in conclusion, notices a singular Vorticellidan Infusorian of the genus *Scyphidia*, which occurred on the extremity of the copulatory organ of several of his *Truncatellæ*. The species of this genus have hitherto been known only from fresh water; to this marine species he gives the name of *Scyphidia Fischeri*. It has a cylindrical body, slightly attenuated above; its peristome is not much reflexed; and it has a broad and very thick foot, enabling it to adhere strongly to the bodies on which it occurs. Its surface is slightly striated in the direction of its length. These Infusoria move very slowly.—*Comptes Rendus*, Sept. 7, 1885, p. 575.

On the Development of Aurelia aurita *and* Cotylorhiza borbonica. By Dr. A. Götte.

The first segmentations of the ovum produce neither exclusively equal nor exclusively unequal blastomeres, but the two occur promiscuously together.

A *cœlogastrula* with a narrower or wider archenteron and a prostoma always exists; but, so far as I can see, is *never produced by invagination*. There is rather in the cœloblastula a perfectly irregular migration of endodermal cells into the blastocœloma, so that there originates from it a *sterrogastrula* of which the endoderm becomes secondarily excavated (archenteron) and breaks out (prostoma). By the closure of the prostoma and the development of cilia on the ectoderm the cœlogastrula is converted into the larva (planula), which swims along with the vertical (aboral) pole forward and attaches itself thereby.

Before or after the attachment a sacciform *invagination of the ectoderm* is produced at the prostomial end (Kowalevsky), and this becomes the *persistent ectodermal œsophagus*, which breaks through into the stomach. At the same time the endoderm becomes sacculated in the form of the finger of a glove at two opposite sides between the œsophagus and the ectoderm; these first two *gastral sacs* are continued downwards like grooves in the wall of the stomach, two gastral folds being produced there in each case. Between the two primary gastral sacs a new but broader gastral sac is formed on each side; and the four sacs surrounding the œsophagus at the same time by their contiguity form four *septa*, which are continued downwards into the gastral folds.

The *tentacles* grow forth above the gastral sacs, at first one over each of the primary, and then three over each of the secondary sacs; of these latter (3+3) tentacles the four outer ones push forth each in a septal plane. It is only at a later period that the four quadrants become equal in their dimensions and in number of tentacles.

The so-called *muscles* of the Scyphistomes originate neither from the endoderm nor from the outer wall of the cup, but from funnel-shaped invaginations of the perioral ectoderm into the interior of the septa and folds, into which they extend themselves like tubes and remain hollow. The *orifices* of these tubes are still present on the young strobila, so that the *first Ephyra* appears as the original oral segment of the Scyphistoma.

Besides the strobila-formation a regular budding of the Scyphistoma occurs; in *Cotylorhiza* I frequently saw the bud grow forth with the foot foremost, so that its last connexion with the parent animal was at the mouth.

From these observations, made throughout on intact living objects and upon the finest sections, the following deductions may be drawn:—

a. The *cœlogastrula* of the Scyphomedusæ investigated is a *secondary embryonic form*, as the gastrulation is effected by *the immigration of the endoderm into the cavity of the cœloblastula.*

b. The *Scyphistoma is a perfect Anthozoon.* In favour of the close relationship of these two forms only the gastral folds could hitherto be cited; but these also occur, although imperfectly, in Hydroids, and therefore were not thoroughly decisive as to this relationship. The *invagination of the ectodermal œsophagus observed by me and the gastral sacs and septa surrounding it*, however, stamp the Scyphistoma as a true Anthozoon.

c. As the strobila is produced only by simple division, and the Ephyra originates under certain circumstances, even without division, directly from the Scyphistoma, every ground for the assumption of an alternation of generations in *Aurelia* and *Cotylorhiza* is removed. *The Ephyra, and consequently the Scyphomedusa, is a metamorphosed Scyphistoma or Anthozoon, just as the Hydroid Medusa is a metamorphosed Hydroid Polyp.*—*Zoologischer Anzeiger*, no. 205, Oct. 5, 1885, p. 554.

On the Original Fundamental Numbers of Medusæ and Echinoderms.

By Wilhelm Haacke.

Häckel founds his genealogical tree of the Echinodermata, in which he adopts the Asterida as the ancestors of the other Echinodermata, upon the circumstance that in the Asterida there are species with a variable number of arms and others with a constantly augmented number, while the same thing does not occur in the other Echinodermata, those "worshippers of the number five," with the exception of the Ophiuræ, which, according to Häckel, are nearly related to the Stellerida.

I have now to state that I have found four quaternary examples and one sextenary one in a South-Australian species of the Echinid genus *Amblypneustes*. Whether similar specimens have been